WebWriter

CIL Branch Web Team

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Finding Your Way on the Internet: Signs or Roadblocks?

When you are navigating unfamiliar territory, you look for clear signs to keep you moving in the right direction. By studying user behavior, Web developers can design their sites so that visitors can move about easily. Jakob Nielson, a leading authority on Web usability, is among those who propose that navigation elements are useful but should not be overdone. He suggests using a few generic links, providing breadcrumb trails, and including local links to related content. For more by Nielson, see www.useit.com.

Generic Links

Nielson advises restricting generic links to useful features (search, copyright, contact) and to the home page. For the California Department of Education (Department), these links are contained in the top navigation bar that Department branches have adopted as their standard. On the Curriculum and Instructional Leadership Branch (CIL) site, generic links include Department Home, A-Z Index, Search, and Help. Similarly, the bottom navigation for CIL pages contains links to Feedback, Help, CIL, and Home. CIL pages also include a link to information about the Web team at the bottom of every page so that visitors will know who is responsible for the site.

Structural Navigation

Nielson's research indicates that users ignore structural navigation elements that reflect the way the organization thinks internally such as presenting information based on the names of offices. However, when navigation reflects the needs of the users by organizing pages according to topics or ideas, it becomes easier to maneuver. Using this research, the CIL Branch Web Team recently redesigned the structural navigation of its pages. Before the redesign, navigation mirrored the structural organization of divisions and programs within the branch. Now the CIL pages provide a standard navigation bar with seven topic indexes: accountability, curriculum, professional development, students, family-community, programs, and resources. These seven topic indexes cover all programs across the Department, but reflect the thinking of the users who come to the Web site. If you have pages you want to add to the topic indexes, contact the Web team members listed on page four.

Breadcrumb trails are used on each CIL Web page to take the user back to the levels of the hierarchy above the current location. According to Nielson, such breadcrumb trails serve two purposes:

- The context of the current page allows users to interpret it better. For example, on the CIL Web site not only do you know that you are looking at the mathematics page, but you also know that it belongs to the curriculum and instruction topic index.
- The links allow users to go directly to a higher level of the site in case the current page is not what they wanted. If the user wants information about reading rather than mathematics, the curriculum and instruction topic index is only one click away.

Users often arrive at Web pages through a search or other ways that bypass higher level pages. The breadcrumb trails provide a path back to these higher levels.

Local Navigation

Just as breadcrumbs help users to navigate the structure of a Web site, local navigation, usually presented on the left side of the page, helps users find related content. For the CIL Web site, local links might include a list of resources related to the topic, similar pages that address a particular topic, archived information on a topic, and authorizing legislation. Nielson cautions to include only the most relevant information for local links.

Making Navigation Easy and Fun

The following tips for designing Web navigation come from the July 2000 HTML Writers' Guild Newsletter. You may read the complete list online (www.hwg.org/opcenter/newsletters/tips/jul00a.html).

1. Keep it simple. Avoid using too many links in the main navigation. Too many options cause clutter and confusion.
2. Always let users know where they are relative to the structure of the site.
3. Use consistency in colors, placement, font, and other navigational elements.
4. Keep scrolling to a minimum. Use side, top, and bottom links to keep navigation available.

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Inside this Issue

Designing Web Pages for Universal Accessibility

How can Web authors ensure their pages are accessible and useful to all people, including those with disabilities? Each of us has probably met the limits of our abilities as we have tried to learn about the Internet and its related technologies. But some of us have special needs that are especially important for Web designers to consider. A Web user may have:

- Inability to see, hear, move, or process some types of information
- Difficulty reading or comprehending text
- Inability to use a keyboard or mouse
- A text-only screen, a small screen, or a slow Internet connection
- Inability to speak or understand English fluently
- A different browser, an early version of a browser, a voice browser, or a different operating system

Designing for all visitors generally benefits several disability groups and increases the accessibility for the Web community as a whole.

Web Accessibility Initiative

The World Wide Web Consortium (W3C) has developed Web Content Accessibility Guidelines. The guidelines explain how to make content more accessible to a wide audience, regardless of the user agent they may be using (e.g., desktop browser, voice browser, mobile phone, automobile-based personal computer, etc.) or constraints which they may be facing (e.g., noisy surroundings, under- or over-illuminated rooms, a hands-free environment, etc.). The fourteen guidelines listed in the next article are taken directly from the Web Accessibility Guidelines Web page: www.w3.org/TR/WAI-WEBCONTENT/.

Center for Applied Special Technology

One of the foremost examples of accessible Web design can be found at the Center for Applied Special Technology (CAST), an educational non-profit organization whose mission is to expand opportunities for individuals with disabilities through the development and innovative uses of technology. Their Web site is located at www.cast.org.

CAST also provides a Web-based tool, Bobby**,** which analyzes Web pages for their accessibility for people with disabilities. Developed in 1996, Bobby has been upgraded serveral times to include improved page authoring guidelines, new features, technical enhancements, ease-of-use improvements, and complete documentation. Recently, CAST has worked closely with the W3C on its Web Accessibility Initiative (WAI) to ensure that Bobby employs the Web Content Accessibility Guidelines. To learn more about Bobby and to check Web pages for accessibility, see www.cast.org/bobby/.

Department Web Accessibility

The Clearinghouse for Specialized Media and Technology (CSMT), California Department of Education (www.cde.ca.gov/csmt/), provides a list of resources that may be useful to Department Web developers and others interested in universal access to electronic learning resources (ELR). The list includes a number of links to resources that contain standards, guidelines, checklists, and strategies to help make information and technology more accessible to more people.

Making Web Content Accessible: Guidelines for Web Developers

As Web developers, how do we make sure our content is available to a wide audience? Following the Web Content Accessibility Guidelines listed below will help make content more available to ***all*** users and also help people find information on the Web more quickly.

Guideline 1: Provide equivalent alternatives to visual content. Provide text equivalents of non-text content such as graphics. Text can be output by user agents such as speech synthesizers and Braille displays and can be presented visually in a variety of sizes on computer displays and paper. Synthesized speech is critical for individuals who are blind and for many people with the reading difficulties that often accompany cognitive disabilities, learning disabilities, and deafness.

Guideline 2: Don't rely on color alone. People who cannot differentiate between certain colors and users with devices that have non-color or non-visual displays will not receive information that depends on color. Foreground and background colors must contrast so that they can be viewed by people with different types of color deficits.

Guideline 3: Use markup and style sheets properly. Using markup language (e.g., a layout for a table) according to W3C specifications makes it possible for software to produce these elements so they can be processed by certain browsers and other user agents.

Guideline 4: Clarify natural language usage. When using a term in another language, an acronym, or an abbreviation, identify them with appropriate tags. The tags allow user agents such as Braille translation software and speech synthesizers to generate the text in the appropriate accent with proper pronunciation.

Guideline 5: Create tables that transform gracefully. Unless marked-up properly with the appropriate tags, tables will not provide user agents with the correct information. For example, linearization is a table-rendering process in which the

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contents of the table cells become a series of paragraphs. Cells should be designed so that the page makes sense after linearization. This affects people who access a table through a screen reader or who view only a portion of the page at a time (e.g., users with blindness or low vision using speech output or a Braille display).

Guideline 6: Ensure that pages featuring new technologies transform gracefully. When implementing new technologies, Web developers need to be sure that their pages still accommodate older browsers. Validating your pages to HTML 4.0 standards will help accommodate all browsers.

Guideline 7: Ensure user control of time-sensitive content changes. Moving, blinking, scrolling, or auto-updating objects on pages must be designed to be paused or stopped. Some people with cognitive or visual disabilities are unable to read moving text quickly enough or at all. Screen readers are unable to read moving text.

Guideline 8: Ensure direct accessibility of embedded user interfaces. Make programmatic elements such as scripts and applets directly accessible or compatible with technologies used to help users access information. To learn more, see the Web sites at Trace Research and Development (trace.wisc.edu/world/java/java.htm) and IBM Special Needs Systems (www.austin.ibm.com/sns/access.html).

Guideline 9: Design for device independence. Device independent access means that users may interact with the user agent or document with the tool they prefer — mouse, keyboard, voice, head wand, or other. Generally, pages that allow keyboard interaction are also accessible through speech input or other devices.

Guideline 10: Use interim solutions. Interim accessibility solutions allow assistive technologies such as screen readers to operate correctly. For example, older screen readers read lists of consecutive links as one link, making them difficult or impossible to access. Note: "Interim" means that the Web Content Guidelines Working Group will drop this guideline when Web technologies accommodate users' capabilities.

Guideline 11: Use W3C technologies and guidelines. The current guidelines recommend W3C technologies (e.g., HTML, CSS, etc.) because W3C specifications undergo review to ensure that accessibility issues are considered during the design phase. Where it is not possible to use a W3C technology, provide an alternative version of the content designed for universal access.

Guideline 12: Provide context and orientation information. Grouping elements and providing contextual information about the relationships between elements can be helpful for all users. Complex relationships between parts of a page may be difficult for people with cognitive and visual disabilities.

Guideline 13: Provide clear navigation mechanisms. Clear and consistent navigation elements such as the structure of the site or navigation bars increase the likelihood that all users will find what they are looking for.

Guideline 14: Ensure that documents are clear and simple. Consistent page layout, recognizable graphics, and easy-to-understand language benefit all users. In particular, they help people with cognitive disabilities or who have difficulty reading. Using clear and simple language promotes effective communication and benefits people whose first language may differ from the language used on the Web page including those who communicate in sign language.

To learn more about the guidelines, see www.w3.org/TR/WAI-WEBCONTENT/.

Making Navigation Easy and Fun (cont. from page 1)

5. Tell users where a link will take them. Design navigation elements that are so easy a user does not have to "learn" the site.
6. Use text rather than graphics for navigation. Graphics may hinder navigation if users don't understand what they mean.
7. Avoid a "dead end" page where there is no logical step forward. Always give the user a way out.
8. Check navigation in as many browsers as possible (at a minimum, Netscape Navigator and Internet Explorer) to ensure that pages are displayed consistently.
9. For long Web pages, create "Back to Top" links and add them to several sections of the document.
10. Design navigation elements with the idea that users have no familiarity with your site and are visiting for the first time.
11. Always check for any broken links, especially after revising a page.
12. Create a vertical menu of all main sections of your site at the left margin of every Web page.

Powering Your Search for Information with the Right Engine

When you venture onto the Internet, you have millions of Web pages at your fingertips, but only a few will be helpful. How do you effectively sort through this vast storehouse of information? Because no single strategy or tool will always separate the wheat from the chaff, here are serveral suggestions.

Using Your Browser

You may be able to find the Web site you are looking for by just typing your destination into the browser. Don't bother with http:// or www. Type "California Department of Education," and recent versions of Internet Explorer and Netscape Navigator will take it from there.

Engines Versus Directories

Search engines use electronic tools or "spiders" that comb the Internet and file Web pages into a huge index, something like the white pages of a telephone book. Google.com and Raging.com are examples of search engines. A meta search engine like MetaCrawler sifts through the results of other search engines. Directories, on the other hand, are like the telephone yellow pages. They are developed by people who review Web pages and organize them into categories. Yahoo.com and About.com are examples of directories. Whether you use search engines or directories depends on your needs. If you want a few focused pages that you can browse by categories, use a directory—but realize that you will have limited selections to choose from. If you want a lot of results so that you can make your own decisions about relevance and quality, rely on a search engine. You may find it helpful to test briefly several search engines and directories with some keywords or phrases related to your research topic. Then if you find one or two that are especially responsive, you can go further into the engine or directory to research your topic more extensively.

Choosing Keywords

When conducting a search, your choice of keywords and phrases will greatly affect the results. Think carefully about your topic and choose the words that best match your interest. Proper nouns should be capitalized to improve your search. If you are looking for a place to eat in San Francisco, try "French restaurants San Francisco" (no need for "in") rather than "restaurants." Depending on your budget, you may add "cheap" or "expensive" in your phrase. Be careful with "and" because if you are looking for information about cats and dogs, typing "cats and dogs" into the search may produce only those Web pages that contain both cats and dogs.

We all need to learn how to search for information and evaluate what we find—in short, how to turn information into knowledge.

Avoiding Useless Words

You can improve your search skills by remembering to avoid some common mistakes—like using meaningless words such as forms of the verb "to be," prepositions, and articles. If you must use prepositions or conjunctions in your search for something like Hamlet's famous lines, try putting them in quotes: "to be or not to be." You will also get bad results when you use words that have multiple meanings. For example, if you search with only "Canton," the engine will not know if you are looking for a city in Ohio or China.

Searching at a Web Site

According to Jakob Nielsen, a specialist in user behavior, more than half of us rely on search tools on a site rather than following links to our destination. After you land on a Web site, look for its own search tool to find what you need. Note that on the Department site we try to give you access to our search engine on every Web page.

Finding Reliable Results

Search engines and directories provide information that you must authenticate yourself. Google and Raging offer purely free searches, but most engines rely on advertising for support. Results can be influenced by sponsors or those who have a financial interest in the engine. For example, if your keyword is related to real estate, the results may include links to agents or property for sale. Other engines might rank the results based on how much sponsors paid for including them in the engine's database. Searching with more than one engine or using a meta search engine can help you generate a more comprehensive and objective listing. As you review the results and visit the sites, check for reliability: Are the pages up to date? Do they provide references that authenticate their contents? We all need to learn how to search for information and evaluate what we find—in short, how to turn information into knowledge. (Note: The editor is grateful to Joseph Arellano. Department of Health Services, for helpful suggestions for this article.)

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